

Species Interactions

by Professor R. Robberecht

The interactions among species can be categorized several different ways. The interaction can range from none to a highly integrated and complex interaction in which the interacting organisms cannot exist separately. The puzzle below examines your mastery of species interactions.

Learning tip Print and solve the crossword puzzle. Alternate your study with repeated work on the puzzle until you can readily complete the puzzle without assistance of the learning materials.

Study materials for this crossword puzzle:

Textbooks

Chapters 13 -16, *Elements of Ecology*, Smith & Smith, 8th edition

Sections I – L, and N, Instant Notes in Ecology, Mackenzie et al. (Optional)

Course internet site

[Lecture presentation on Interactions](#)

[Interactive lesson on Interactions](#), including the study questions and review section

Summary table of interactions

Note that an interaction can only be identified by knowing both scenarios: how the two species interact when they are together and apart.

Interaction	Together		Apart	
	Species A	Species B	Species A	Species B
Neutralism	0	0	0	0
Competition	-	-	0	0
Mutualism	+	+	-	-
Protocooperation	+	+	0	0
Commensalism	+	0	-	0
Amensalism	0 or +	-	0	0
Parasitism	+	-	-	0
Predation	+	-	-	0
Herbivory	+	-	-	0

+ = beneficial effect

0 = no effect

= negative effect

From: Burkholder 1952

ACROSS		DOWN	
2	A common parasite in white-tailed deer (2 words)	1	One function of proto cooperation for animals
5	An obligate interaction benefiting both organisms. Both organisms are negatively affected when separated	3	Mycorrhizae are an example of this type of interaction
10	Winged animals that are parasitoids	4	A type of microscopic parasite that causes many diseases in humans
12	An intermediate host of parasite in white-tailed deer	6	The minimum number of organisms required for an interaction
13	One of the two scientists who developed a mathematical model of interspecific competition	7	Prefix to 'patric', which describes species that occur in different geographical area
14	Sleeping sickness is a disease caused this parasite in human blood	8	Environment where humans contract schistosomiasis
15	A commensal plant life form	9	Scientist who postulated that competition can cause extinction of one of two competing species
18	Prefix that describes competition between species	11	Some types of eight-legged parasitoids
20	A plant parasite on oak and juniper trees and for festive occasions	12	An organism that feed on dead or dying tissue
21	Scientist who first described amensalism	16	An orange mite is this type of parasite on a fly
23	The transport of one animal by another	17	One organism benefits while the other is negatively affected
28	The term for species that occur in the same geographical area	19	One of the two scientists who developed a mathematical model of interspecific competition
32	A facultative interaction benefiting both organisms. When separated, neither organism is negatively affected.	22	Prefix that describes parasites that cause schistosomiasis in humans
36	A mutualistic plant life form	24	A common parasite of fish

ACROSS		DOWN	
38	A disease caused by worm cysts in human muscle	25	A flower color that suggests a bird-plant interaction
39	A region of the solar spectrum that is significant for insect-plant interactions	26	A process that joins two trees in a relationship of proto cooperation
41	Prefix that describes a parasite that lives on the outside of its host	27	Scientist who developed the competitive exclusion principle'
43	Prefix that describes competition among individuals of the same species	28	A fig that is commensal at one life stage and parasitic at another life stage
45	One function of mutualism for animal species	29	A dead body as energy for saprobes
46	When together, organism A benefits while organism B is unaffected; when separated, the organism A negatively affected	30	Prefix that describes a parasites that lives inside its host
47	An intermediate host for the Schistosoma parasite	31	A louse fly is this type of parasite on feathers
48	The consumption of all or part of an organism by a consumer	33	A mutualistic interaction between plants and animals
49	Witchweed is an ectoparasite on this major agricultural crop of South American origin	34	Dodder is an ectoparasite on this important nitrogen-fixing forage plant
51	An interaction for a common resource in limited supply	35	Allelochemical interactions, for example
52	An interaction where two organisms have no affect on each other	37	A bird that can have a commensal interaction with cattle
		40	An organism that consume the living tissues of other organisms, eventually resulting in the death of the host
		42	An ectoparasite on lizards
		44	A common endoparasite in the intestines of fish species, including the burrfish
		50	A parasite on the eyes of bird such as hoatzin

